

Abstract

An electromagnetic, liquid or gas cooled solenoid coil is constructed of an inner
5 core formed by a simulated pole piece. The inner core has coolant feed ports that
communicate with a surrounding perforated bobbin. A pair of ordinary electromagnetic
wires is twisted around each other to form a helix, and the helix is wrapped around the
perforated bobbin. Liquid or gas coolant is introduced into an opening in the core, flows
through the ports into the bobbin, and then flows radially through the coil from the inside
10 diameter of the coil to the outside diameter of the coil, thereby removing heat from the
self-heating coil wire. In alternative embodiments, a supply manifold and receiver
manifold are integrated into the solenoid coil.